

North Carolina 2018 - R402.1.5 Total UA



SOUTHERN ENERGY
MANAGEMENT
ENERGY EFFICIENCY & SOLAR POWER

Property

NC 27546
Model: Brunswick 2355
Community: NA

Organization

Southern Energy Manager
Justin Smith

Inspection Status

Results are projected

Brunswick 2355 slab
Caviness & Cates - Brunswick 2355

Builder

Caviness and Cates

Building UA

Elements	NC Reference	As Designed
Ceilings	44.8	40.1
Above-Grade Walls	183.7	149.3
Windows, Doors and Skylights	109.1	89.7
Slab Floor:	72.7	94.2
Framed Floors	22.0	23.5
Foundation Walls	0.0	0.0
Rim Joists	8.6	7.5
Overall UA (Design must be equal or lower):	440.9	404.3

Requirements

<input checked="" type="checkbox"/>	402.1.5	Total UA alternative for insulation and fenestration
<input checked="" type="checkbox"/>	402.3.2 Glazed Fenestration SHGC	Average SHGC: 0.23 Max SHGC: 0.30
<input checked="" type="checkbox"/>	R402.4.2.2	Air Leakage Testing Air sealing is 0.29 CFM50 / ft ² Shell Area. It must not exceed 0.30 CFM50 / ft ² Shell Area.
<input checked="" type="checkbox"/>	R402.5	Area-weighted average fenestration SHGC
<input checked="" type="checkbox"/>	R402.5	Area-weighted average fenestration U-Factor
<input checked="" type="checkbox"/>	R404.1	Lighting Equipment Efficiency
<input checked="" type="checkbox"/>	Mandatory Checklist	Mandatory code requirements that are not checked by Ekotrope must be met.
<input checked="" type="checkbox"/>	R403.3	Duct Insulation
<input checked="" type="checkbox"/>	403.3.3	Duct Testing

Design exceeds requirements for North Carolina 2018 Prescriptive compliance by 8.3%.

Name: Justin Smith
Organization: Southern Energy Management

Signature: Justin Smith
Digitally signed: 1/16/20 at 11:13 AM

Ekotrope RATER - Version 3.2.3.2336

North Carolina 2018 Prescriptive compliance results calculated using Ekotrope RATER's energy and code compliance algorithm, including appropriate amendments.
Ekotrope RATER is a RESNET Accredited HERS Rating Tool. All results are based on data entered by Ekotrope users.
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General Building Information

Number Of Bedrooms	4
Number Of Floors	2
Conditioned Floor Area [sq. ft.]	2,355
Unconditioned, attached garage?	Yes
Conditioned Volume [cu. ft.]	20,888
Total Units in Building	1
Residence Type	Single family detached
Floor Number	-
Model	Brunswick 2355
Community	NA
Climate Zone	4A

Foundation Wall

None Present

Foundation Wall Library List

None Present

Slab

Name	Library Type	Perimeter	Floor Grade	Carpet R	Exposed Masonry Area	Surface Area	Location	Enclosing
slab	Uninsulated	154	On Grade	1	0	1,024.0 ft ²	Exposed Exterior	Conditioned Space

Slab Library List

Name	Wall Construction Type	Slab Completely Insulated?	Underslab Insulation Width [ft]	Perimeter Insulation Depth [ft]	Perimeter Insulation R Value	Thermal Break	Effective R-value
Uninsulated	Wood Frame / Other	No	0	0	0	No	0.00

Framed Floor

Name	Library Type	Carpet R	Floor Grade	Surface Area	Location
over garage	R-19, 16"OC G2 Carpet	0	Above Grade	468.0 ft ²	Unconditioned, attached garage

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Framed Floor Library List

Name	Effective R-value
R-19, 16"OC G2 Carpet	19.934

Rim Joist

Name	Library Type	Surface Area	Location
1st floor ambient	R 19 G2, 16"OC	112.0 ft ²	Exposed Exterior
1st floor garage	R 19 G2, 16"OC	42.0 ft ²	Unconditioned, attached garage

Rim Joist Library List

Name	Effective Insulation R-value
R 19 G2, 16"OC	15.40

Wall

Name	Library Type	Surface Color	Surface Area	Location
1st floor ambient	R 19 FG G2 16" O.C	Medium	1,004.0 ft ²	Exposed Exterior
1st floor garage	R 19 FG G2 16" O.C	Medium	382.0 ft ²	Unconditioned, attached garage
2nd floor ambient	R 19 FG G2 16" O.C	Medium	1,312.0 ft ²	Exposed Exterior

Wall Library List

Name	Effective R-value
R 19 FG G2 16" O.C.	15.977

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Glazing

Name	Library Type	Wall Assignment	Foundation Wall Assignment	Overhang Depth	Overhang Ft To Top	Overhang Ft To Bottom	Orientation	Surface Area
front 2nd unshaded	30/23	2nd floor ambient		0	0	0	West	64.3 ft ²
front unshaded	30/23	1st floor ambient		0	0	0	West	33.0 ft ²
left 2nd unshaded	30/23	2nd floor ambient		0	0	0	North	16.0 ft ²
left unshaded	30/23	1st floor ambient		0	0	0	North	13.8 ft ²
rear 2nd unshaded	30/23	2nd floor ambient		0	0	0	East	45.0 ft ²
rear unshaded	30/23	1st floor ambient		0	0	0	East	71.7 ft ²
right 2nd unshaded	30/23	2nd floor ambient		0	0	0	South	15.0 ft ²
right unshaded	30/23	1st floor ambient		0	0	0	South	15.0 ft ²

Glazing Library List

Name	Shgc	U-factor
30/23	0.23	0.300

Skylight

None Present

Skylight Library List

None Present

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Opaque Door

Name	Library Type	Wall Assignment	Foundation Wall Assignment	Emittance	Solar Absorptance	Surface Color	Surface Area	Location
front entry	Fiberglass R-5	1st floor ambient		0.9	0.75	Medium	20.0 ft ²	Exposed Exterior
garage entry	Fiberglass R-5	1st floor garage		0.9	0.75	Medium	18.0 ft ²	Exposed Exterior

Opaque Door Library List

Name	Effective U-factor
Fiberglass R-5	0.200

Roof Insulation

Name	Library Type	Attic Exterior Area [s.f.]	Clay or Concrete Roof Tiles	Surface Color	Surface Area	Location
attic	R-38 Attic BLOWN FG G1 2x10 24"OC w/ Radiant Barrier	2,193.24	No	Dark	1,492.0 ft ²	Attic

Roof Insulation Library List

Name	Has Radiant Barrier	Effective R-value
R-38 Attic BLOWN FG G1 2x10 24"OC w/ Radiant Barrier	Yes	37.246

Whole House Infiltration

Infiltration	Measurement Type	Shelter Class
1671 CFM at 50 Pa	Blower-door tested	4

Mechanical Ventilation

None Present

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Lighting

% Interior Fluorescent Lighting	% Interior LED Lighting	% Exterior Fluorescent Lighting	% Exterior LED Lighting	% Garage Fluorescent Lighting	% Garage LED Lighting
75	0	0	0	0	0

Onsite Generation

None Present

Onsite Generation Library List

None Present

Solar Generation

None Present

Solar Generation Library List

None Present

Conditioning Equipment

Name	Library Type	Heating Percent Load	Cooling Percent Load	Hot Water Percent Load	Location
Air-source heat pump	z 36k 14 seer 8.0hspf	100%	100%	0%	Unspecified
Water Heating	Z 50 gal. 0.91EF elec	0%	0%	100%	Unspecified

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Equipment Type: Z 50 gal. 0.91EF elec

Fuel Type	Electric
Distribution Type	Hydronic Delivery
Hot Water Efficiency	0.91 Energy Factor
Tank Capacity (gal.)	50
Hot Water Capacity [kBtu/h]	40
Recovery Efficiency	0.98

Equipment Type: z 36k 14 seer 8.0hspf

Fuel Type	Electric
Distribution Type	Forced Air
Motor Type	PSC (Single Speed)
Heating Efficiency	8 HSPF
Heating Capacity [kBtu/h]	36
Cooling Efficiency	14 SEER
Cooling Capacity [kBtu/h]	36

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Distribution System

Distribution Type	Forced Air
Heating Equipment	Air-source heat pump
Cooling Equipment	Air-source heat pump
Sq. Feet Served	2355
# Return Grilles	3
Supply Duct R Value	8
Return Duct R Value	8
Supply Duct Area [ft ²]	635.85
Return Duct Area [ft ²]	353.25
Leakage to Outdoors	94 CFM @ 25Pa (3.99 / 100 s.f.)
Total Leakage	94 CFM25
Total Leakage Duct Test Conditions	Post-Construction
Use Default Flow Rate	Yes
Duct 1	
Duct Location	Attic (well vented, radiant barrier)
Percent Supply Area	70
Percent Return Area	70
Duct 2	
Duct Location	Conditioned Space
Percent Supply Area	30
Percent Return Area	30
Duct 3	
Duct Location	Conditioned Space
Percent Supply Area	0
Percent Return Area	0
Duct 4	
Duct Location	Conditioned Space
Percent Supply Area	0
Percent Return Area	0
Duct 5	
Duct Location	Conditioned Space
Percent Supply Area	0
Percent Return Area	0
Duct 6	
Duct Location	Conditioned Space
Percent Supply Area	0
Percent Return Area	0

Ceiling Fan

Has Ceiling Fan	Yes
Cfm Per Watt	100

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Water Distribution

Water Fixture Type	Standard
Use Default Hot Water Pipe Length	No
Hot Water Pipe Length [ft]	77
At Least R3 Pipe Insulation?	No
Hot Water Recirculation System?	No
Recirculation System Pipe Loop Length [ft]	20
Drain Water Heat Recovery?	No

Clothes Dryer

Fuel Type	Electric
Cef	2.617
Field Utilization	Timer Controls

Clothes Washer

Label Energy Rating	151 kWh/Year
Electric Rate	\$0.11/kWh
Annual Gas Cost	\$12.00
Gas Rate	\$1.22/Therm
Capacity	3.31
Imef	2.15474

Appliances and Controls

Programmable thermostat?	Yes
Dishwasher Size	Standard
Dishwasher Efficiency	0.65 EF
Range/Oven Fuel	Electric
Convection Oven?	No
Induction Range?	No
Refrigerator Consumption	691 kWh/Year

Notes

Initial Inputs _____ JS 09/05/19 _____

- confirm HVAC specs
- confirm if programmable thermostats installed
- modeled to worst case orientation
- confirm cfl lighting %